

Mars Rover Celebration NGSS Alignment

WEEK 5: DESIGNING AND BUILDING

LESSON 13: CONSTRUCT MOCK-UP

GRADE LEVEL: 3-5

PERFORMANCE EXPECTATIONS

In the NGSS framework, one of the important things that teachers need to do is explicitly identify when Science and Engineering Practices (SEP) and Cross Cutting Concepts (CCC) are being covered. The SEP's and CCC's are pervasive throughout the Mars Rover Celebration curriculum. The tables here are intended to assist the teacher in deciding when to mention that an SEP or CCC is part of the material being presented.

Lesson Objectives		
Students who demonstrate understanding can: <ul style="list-style-type: none"> Explore the importance of engineering in our society Work as a team to build a prototype of the team's rover using student Science Notebooks and team sketches as a guide 		
3-5 Engineering Design		
3-5-ETS1-3 Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.		
SCIENCE AND ENGINEERING PRACTICES (SEP)	DISCIPLINE CORE IDEAS (DCI)	CROSSCUTTING CONCEPTS (CCC)
Analyzing and Interpreting Data Analyze and interpret data to determine similarities and differences in findings	ESS1: Earth's Place in the Universe: ESS1.B: Earth and the Solar System	System and System Models A system can be described in terms of its components and interactions.
Developing and Using Models Develop models to describe phenomena	ETS1: Engineering Design: ETS1.C: Optimizing the Design Solution	Influence of Engineering, Technology and Science on Society and the Natural World Engineers improve existing technologies or develop new ones to increase their benefits, decrease known

risks, and meet societal demands

SUMMARY OF THE THREE DIMENSIONS

The 5E lesson model provides the 5 phases of learning that helps to facilitate the process of science understanding. Teachers are encouraged to use the table below to help align their teaching methods with the embedded Science and Engineering Practices (SEP), Disciplinary Core Ideas (DCI) and Cross Cutting Concepts (CCC) present in the lesson.

5E MODEL PHASE	SCIENCE AND ENGINEERING PRACTICES (SEP)	DISCIPLINE CORE IDEAS (DCI)	CROSSCUTTING CONCEPTS (CCC)
ENGAGE	Analyzing and Interpreting Data	Earth and the Solar System	Systems and System Models
EXPLORE	Developing and Using Models	Earth and the Solar System Optimizing the Design Solution	Systems and System Models Influence of Engineering, Technology and Science on Society and the Natural World
EXPLAIN	Developing and Using Models	Earth and the Solar System Optimizing the Design Solution	Systems and System Models Influence of Engineering, Technology and Science on Society and the Natural World
ELABORATE	Developing and Using Models	Earth and the Solar System Optimizing the Design Solution	Systems and System Models Influence of Engineering, Technology and Science on Society and the Natural World
EVALUATE	Performance Expectations	Performance Expectations	Performance Expectations